

IN THE CLAIMS:

1. (Currently amended) A phosphoprotein detection reagent (PPDR) comprising: ~~a chelator-metal ion moiety and a detectable moiety conjugated to the chelator-metal ion moiety, wherein:~~
    - (i) a polydentate chelator that coordinates a the metal ion ~~[[is]]~~ selected from the group consisting of  $\text{Fe}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Yb}^{3+}$ , and  $\text{Ga}^{3+}$ ; and
    - (ii) a detectable moiety conjugated to the polydentate chelator at a site other than a potential metal ion coordination site;~~[[ii]]~~ wherein when the metal ion is coordinated to the polydentate chelator, a the chelator-metal ion moiety is formed that can selectively bind~~[[s]]~~ to a phosphorylated amino acid residue in a phosphoprotein if present to create a chelator-metal ion-phosphoprotein (CMPP) complex; and
  - (ii) the detectable moiety allows the CMPP complex to be detected if present.
2. (Original) The PPDR of claim 1, wherein the PPDR is soluble in an aqueous medium.
3. (Currently amended) The reagent of claim 1, wherein the chelator is a tetradentate nitriloacetic acid.
4. (Currently amended) The reagent of claim 1, wherein the chelator is a tridentate iminodiacetic acid.
5. (Canceled)
6. (Previously presented) The reagent of claim 1, wherein the metal ion is  $\text{Ga}^{3+}$ .
7. (Previously presented) The reagent of claim 1, wherein the metal ion is  $\text{Fe}^{3+}$ .

8. (Original) The reagent of claim 1, wherein the detectable moiety is biotin.
9. (Original) The reagent of claim 1, further comprising a spacer between the chelator-metal ion moiety and the detectable moiety.
10. (Currently amended) A method for synthesizing a phosphoprotein detection reagent (PPDR) ~~that is soluble in an aqueous medium~~, the method comprising~~[[:]]~~
  - (a) reacting a polydentate chelator donor molecule with a detectable moiety donor under conditions wherein a detectable moiety is transferred to a polydentate chelator at a site other than a coordination site to form a chelator-detectable moiety complex;~~;~~ and
  - ~~(b) — mixing the chelator-detectable moiety complex and a metal ion-containing solution comprising a metal ion selected from the group consisting of  $\text{Fe}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Yb}^{3+}$ , and  $\text{Ga}^{3+}$  under conditions wherein the chelator-detectable moiety complex coordinates the metal ion, forming a PPDR that~~ wherein the PPDR is soluble in aqueous medium.
11. (Original) The method of claim 10, wherein the chelator donor molecule is selected from the group consisting of 2-(aminooxyethyl)iminodiacetic acid (AIDA), aminobutyl-nitriloacetic acid (AB-NTA), and iminodiacetic acid (IDA).
12. (Original) The method of claim 10, wherein the detectable moiety donor is selected from the group consisting of sulfo-N-hydroxysuccinimidyl-biotin (sulfo-NHS-biotin), sulfosuccinimidyl-6-(biotinamido) hexanoate (sulfo-NHS-LC-biotin), sulfosuccinimidyl-6-(biotinamido)-6-hexanimido hexanoate (sulfo-NHS-LC-LC-biotin), and penta-fluorophenyl-biotin.
13. (Original) The method of claim 10, wherein the detectable moiety donor is present in the reacting step in a molar excess over the polydentate chelator donor molecule.

14. (Original) The method of claim 10, wherein the chelator-detectable moiety complex and a metal ion-containing solution are present in equimolar concentrations in the mixing step.

15-35. (Canceled)

36. (Currently amended) A kit comprising:

(a) a phosphoprotein detection reagent (PPDR) comprising ~~a chelator-metal ion moiety and a detectable moiety conjugated to the chelator-metal ion moiety, wherein:~~

(i) a polydentate chelator that coordinates a the metal ion ~~[[is]]~~ selected from the group consisting of  $\text{Fe}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Yb}^{3+}$ , and  $\text{Ga}^{3+}$ ; and

(ii) a detectable moiety conjugated to the polydentate chelator at a site other than a potential metal ion coordination site,

wherein when the chelator is coordinated to a metal ion, the a chelator-metal ion moiety is formed that can selectively bind~~[[s]]~~ to a phosphorylated amino acid residue in a phosphoprotein if present to create a chelator-metal ion-phosphoprotein (CMPP) complex~~[[;]]~~ and

~~(iii)~~ the detectable moiety allows the CMPP complex to be detected if present; and

(b) instructions for using the PPDR.

37. (Canceled)

38. (Original) The kit of claim 36, further comprising a secondary reagent for detecting the PPDR.

39. (Previously presented) The kit of claim 36, wherein the phosphoprotein detection reagent (PPDR) is soluble in aqueous medium.

Please add the following new claims:

40. (New) The method of claim 10, further comprising mixing the chelator-detectable moiety complex and a metal ion-containing solution comprising a metal ion selected from the group consisting of  $\text{Fe}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Yb}^{3+}$ , and  $\text{Ga}^{3+}$  under conditions wherein the chelator-detectable moiety complex coordinates the metal ion.
41. (New) A phosphoprotein detection reagent (PPDR) comprising a chelator and a detectable moiety conjugated to the chelator, wherein:
  - (i) the chelator comprises a tetradentate nitriloacetic acid or a tridentate iminodiacetic acid that coordinates a metal ion selected from the group consisting of  $\text{Fe}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Yb}^{3+}$ , and  $\text{Ga}^{3+}$ ;
  - (ii) when the chelator is coordinated to a metal ion, a chelator-metal ion moiety is formed that can selectively bind to a phosphorylated amino acid residue in a phosphoprotein if present to create a chelator-metal ion-phosphoprotein (CMPP) complex, and the detectable moiety allows the CMPP complex to be detected if present; and
  - (iii) the PPDR is soluble in aqueous medium.
42. (New) The phosphoprotein detection reagent (PPDR) of claim 40, wherein the metal ion is  $\text{Ga}^{3+}$ .
43. (New) The phosphoprotein detection reagent (PPDR) of claim 40, wherein the metal ion is  $\text{Fe}^{3+}$ .
44. (New) The phosphoprotein detection reagent (PPDR) of claim 40, wherein the detectable moiety is biotin.
45. (New) The phosphoprotein detection reagent (PPDR) of claim 40, further comprising a spacer between the chelator and the detectable moiety.

46. (New) A composition comprising:
- (a) a metal ion selected from the group consisting of  $\text{Fe}^{3+}$ ,  $\text{Al}^{3+}$ ,  $\text{Yb}^{3+}$ , and  $\text{Ga}^{3+}$ ; and
  - (b) a phosphoprotein detection reagent (PPDR) comprising a chelator and a detectable moiety, wherein:
    - (i) the detectable moiety is conjugated to the chelator at a site other than a potential metal ion coordination site;
    - (ii) the chelator comprises a polydentate chelator coordinated to the metal ion to form a chelator-metal ion moiety that can selectively bind to a phosphorylated amino acid residue in a phosphoprotein if present to create a chelator-metal ion-phosphoprotein (CMPP) complex;
    - (iii) the detectable moiety allows the CMPP complex to be detected if present.